

Epitomes

Important Advances in Clinical Medicine

Neurosurgery

The Scientific Board of the California Medical Association presents the following inventory of items of progress in neurosurgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in neurosurgery that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Neurosurgery of the California Medical Association and the summaries were prepared under its direction.

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Head Injury

THE CONSEQUENCES of minor and moderate head injuries have been the subject of ongoing controversy in the medical community for many years. Some have maintained that concussion is never associated with cognitive or behavioral sequelae, while others have argued that most patients suffering minor head injuries, and all with moderate head injuries, have at least transient cerebral dysfunction. Most recently, a series of objective studies has been carried out to detail both the short- and long-term consequences of head injuries that do not produce coma. Pioneering studies from New Zealand, followed by an important investigation at the University of Virginia, have suggested that minor and moderate head injuries can have long-term cognitive sequelae in a substantial number of patients.

It was recently shown that most patients who suffered a minor head injury, defined as a head injury producing a transient loss of consciousness and followed by a stay in hospital of no more than 48 hours, had evidence of transient cerebral dysfunction. Intellectual problems in the areas of memory, attention, and abstract thinking were seen on the initial evaluation within a week of injury. At one month, substantial improvement had occurred; at three months, the great majority of patients had returned to normal. About 15% continued to have significant cognitive sequelae, however. Behavioral manifestations such as headache, depression, insomnia, and imbalance or disequilibrium improved substantially in most patients at three months.

One can conclude from this multicenter study that minor head injury produces transient cerebral dysfunction, most of which is completely reversible and resolves within three months, but that there is a group of patients—"the miserable minority"—in whom long-term cognitive sequelae are present. In California alone, about 40,000 patients are admitted to hospital with minor and moderate head injuries each year. Many are dysfunctional for some months, either in the workplace or at home. Further delineation of this transient cerebral dysfunction and better treatment strategies for such patients are required.

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Timing of Surgical Therapy for Aneurysms

THE SUCCESSFUL TREATMENT of intracranial aneurysms remains a major challenge to the specialty of neurologic surgery. Although alternative forms of interventional neuro-radiologic procedures are being developed, the time-honored definitive procedure of choice in the treatment of ruptured saccular intracranial aneurysms remains microsurgical exposure and clip obliteration of the lesion.

It is estimated that about 28,000 subarachnoid hemorrhages occur per year in North America and that a third of patients die as a result of their initial hemorrhage or are misdiagnosed. The other approximate two thirds of these patients reach facilities with neurosurgeons capable of definitively caring for the lesion but only half of this patient population has a reasonable outcome. The other half—an estimated 9,000 persons—die of the complications of rebleeding and vasospasm or medical and surgical complications.

The goal of surgical intervention is to prevent rebleeding and facilitate the treatment of vasospasm. Although "late" intervention still has its proponents, a more urgent and early approach may offer a more favorable outcome. Modern principles of neuroanesthesia, adjunctive measures to produce a "slack" brain—using mannitol and cerebrospinal fluid drainage—combined with microsurgical techniques, a judicious use of temporary clips, minimal brain retraction, and dissection within the subarachnoid cisterns and outside the brain offer the opportunity to successfully clip off the offending aneurysm from the adjacent circulation. This can be done soon after the hemorrhage, thus obviating the risk to the patient of rebleeding. Operating early also provides a surgeon the opportunity to open up the arachnoid cisternal pathways and evacuate some of the "toxic" subarachnoid blood and the potential for the topical administration of agents to counteract vasospasm. In the days following early surgical intervention, a patient can be safely managed with hypervolemic-hypertensive therapy should vasospasm become a clinical problem. Surgical treatment is not advisable in those patients in the midst of severe vasospasm, another compelling reason to intervene early.